Remarks

Claims 1, 5-7, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US 5,953,024). Claims 2-3, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Hiramatsu et al. (US 5,168,291). Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Watanabe (US 6,264,303). Claims 8-10 are objected to as being dependent upon a rejected base claim.

1. Rejection of claims 1, 5-7, 13, and 15 under 35 U.S.C. 102(b):

Claims 1, 5-7, 13, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al. (US 5,953,024) for reasons of record, as recited on pages 2-5 of the above-indicated Office action (part of paper no.5).

Response:

Claim 1 has been amended to overcome this rejection. The contents of claim 8 have been merged into claim 1, and claim 8 has been subsequently cancelled. Claim 8 had previously been objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. No new matter is added. In addition, claim 9 has been amended to depend on the amended claim 1, and claim 10 is still dependent upon claim 9. Allowance of claims 1, 9, and 10 is hereby requested.

Claims 5-7 are dependent on claim 1, and should be allowed if claim 1 is allowed. Claims 13 and 15 are cancelled, and are no longer in need of consideration.

2. Rejection of claims 2-3, 11, and 14 under 35 U.S.C. 103(a):

Claims 2-3, 11, and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Hiramatsu et al. (US 5,168,291) for reasons of record, as recited on pages 5-8 of the above-indicated Office action

(part of paper no.5).

Response:

Claim 14 has been cancelled and is no longer in need of consideration. Claims 2-3 and 11 are dependent on claim 1, and should be allowed if claim 1 is allowed.

3. Rejection of claim 12 under 35 U.S.C. 103(a):

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee et al. in view of Watanabe (US 6,264,303) for reasons of record, as recited on pages 8-9 of the above-indicated Office action (part of paper no.5).

Response:

Claim 12 is dependent on claim 1, and should be allowed if claim 1 is allowed.

4. Introduction to new claims 16-19:

Claims 16 and 18 each contain limitations found in the original claim 1, the previously amended claim 3, and original claims 6-7. In addition, claims 16 and 18 are also supported fully in the specification and the figures, particularly Figs.2, 4, and 5. No new matter has been entered through any of the claims 16-19.

One distinguishing feature of claims 16 and 18 over the prior art is expressed in the limitation:

> "**wherein both the first calibration position and the second calibration position are within a range in which the print head is capable of printing the medium**, and the second portion is capable of passing by the first portion when the print head simultaneously ejects ink onto the medium"

For simplicity, please refer to Fig.2 and Fig.5 (Fig.4 is similar, but has the

arrangement of the shield 94 and the light sensor 92 switched). The light sensor 92 detects light emitted from the light source 90. The shield 94 blocks light from the light source 90 when the shield 94 passes over the light sensor 92. A first calibration position is a location where a first edge 96 of the shield 94 starts to block the light. Likewise, a second calibration position is a location corresponding to a second edge 98, where the shield 94 stops blocking the light.

In both Fig.2 and Fig.5, the shield 94 is well within the range in which the print head 60 is capable of printing the medium. Therefore, both the first calibration position and the second calibration position (corresponding to the first edge 96 and the second edge 98) are within the range in which the print head 60 is capable of printing the medium. Thus, the present invention provides two calibrating positions within the printing range to provide real time calibration capability during the printing process.

Although the arrangement of the shield 94 and the light sensor 92 is switched in Fig.4, Fig.4 also shows that the sensor 92 is well within the printing range as well.

Lee et al., on the other hand, shows in Fig.2 and Fig.4(a) a home sensor 40 and two actuators 50 and 60. As Lee et al. states in col.6, lines 4-10, the actuator 50 is used to sense an initial position upon printing and the actuator 60 is used to sense a capping release error generated upon capping. As described in column 5 line 37-44: "For the capping of the nozzle 31, ... so that the carriage 20 moves to the **service interval**. At that time, ... the second actuator 60 is placed at the home sensor 40, the nozzle 31 of the head 30 is capped by the cap 71 to thereby maintain a sealing state." This excerpt clearly shows that the second actuator 60 can only be sensed when the carriage is positioned within the **service interval,** which is out of the range in which the print head can print.

Moreover, Lee does not disclose two calibrating positions as described in claims 16 and 18 of the instant application. Lee does not teach a "first calibrating

position where the shield starts to block the signal transmitted from the signal source to the signal sensor, and a second calibration position where the signal sensor starts to receive the signal transmitted from the signal source again." Specifically, Lee does not mention a second calibration position where the signal sensor starts to receive the signal again. Moreover, Lee also does not show where both the first and second calibration positions are within a range in which the print head is capable of printing the medium.

For these reasons, the applicant submits that new claims 16 and 18 are each patentably distinct from the Lee et al. Claims 17 and 19 simply state that the signals involved are light signals, and contain no new matter. Consideration of claims 16-19 is politely requested.

Respectfully submitted,

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